VILLAGE SANITATION IN INDIA.

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VILLAGE SANITATION IN INDIA.

AMONG other questions which affect the welfare of the 200 millions of Her Imperial Majesty's subjects in India, there is none of greater urgency, or which demands more earnest attention, and at the same time more careful handling, than the introduction of Sanitary Reform into the villages. The necessity for this measure is apparent even to the most casual visitor to the country, but, although earnest representations on the subject have, during the last twenty years, been repeatedly made, as well by the Army Sanitary Commission in England as by the officers of the Sanitary Department in India, it has not, until quite recently, attracted much attention, even from Government, and still less from the general public.

The fact is that Government has not cared, and wisely so, to take this important question up, until the people themselves showed that they felt the need of sanitation, and this, owing to the spread of education, they are only just beginning to do, and that by no means at present generally. Nor is such ignorance on the part of the villagers to be wondered at when it is remembered that from time immemorial village life in India has gone on in one fixed groove, which nothing seemed to alter: wars and tumults might sweep over the land and be followed by their gaunt handmaids Famine and Pestilence, but the villagers who survived their ravages did not perceive the lessons they taught, and resumed their slow life and passed their days in the same immobile way as their forefathers through countless generations had done before them.

But the exigencies of those turbulent times, which preceded the era of British rule, required, as a measure of safety, and in order to guard against the incursions of bands of predatory dacoits, that not only should each village be, if possible, surrounded by a high mud wall, but that the streets inside it should be narrow, and that the walls of the houses facing them should have no external openings through which a midnight marauder might force his stealthy way, whilst the houses were crowded together so that mutual assistance might be the more quickly rendered, and customs regarding the performance of the offices of nature, etc., were established, which are and must ever have been most dangerous

health. The result is that now when the pax Britannica has spread throughout the land—when there is no danger, as in the old days, in going outside the village enclosure—the habits ingrained by the practices of thousands of years cannot be eradicated in a day, and the absence of cleanliness is not recognized by the villagers as an evil, any more than the necessity for fresh air or light in the dwelling is felt by them, and they see nothing wrong in living under conditions which are utterly opposed to all sanitary teaching and experience.

It will be impossible in a pamphlet of this kind to give a detailed description of all the debasing conditions in which the rural population at present habitually, and I fear I must add contentedly, lives. Suffice it to say that the ground surface of every village in India, as well within the habitable area as without, is everywhere loathsomely foul; that the drinking water-supply is too frequently polluted, and that the very air is tainted by sickening emanations from human ordure, offal, filth of all kinds, and misplaced trade processes; that there is no drainage; that the subsoil is not only impure, but damp; that, in fine, almost every sanitary fault exists that could exist; and that every law of decency and of health is grossly violated. This is no exaggerated description of actual conditions to be seen in every village, and when the imagination really grasps what these mean, neither wonder nor astonishment can be felt that such a persistent defiance of the laws of Nature is followed by the outbreak of the most terrible epidemics of cholera and small-pox; whilst bowel-complaints are rife, and fevers, produced by the impure, undrained, and consequently very damp condition of the subsoil around habitations are of an extremely malignant and deadly type, and annually slay their hundreds of thousands of victims As might be expected, the waste of infant life is also in such conditions literally appalling. In one town in the Bombay Presidency I could name, in 1886—an exceptionally healthy year, when there was no cholera or small-pox in movement—the death-rate among infants under one year of age reached the excessive rate of 462 per 1,000, so that nearly half the children who were born died before they were a year old, whilst in another it actually amounted to 617 per 1,000!! The cause of these deaths was traced to insanitary conditions, and indeed no fact has been more clearly demonstrated than that the heavy mortality, which year by year takes place, is for the most part entirely preventable.

Foreign nations undoubtedly view the insanitary conditions of the towns and villages in India as a standing danger to the civilized world: but their action with the view of preventing what they consider possible, *viz.*, the importation of cholera into Europe, is based on entirely erroneous principles, for cholera is not a contagious disease, nor can it be carried about by persons; but instead of taking effective sanitary measures, and thereby rendering the introduction of any filth poison into their maritime or other cities a matter of impossibility, they are dominated by panic and try to save themselves from the results of their own want of cleanliness by imposing quarantine on all vessels arriving at Suez from India, and this principle is carried to

such an outrageous extent that they do not even differentiate between epidemic seasons and times when the disease is at its minimum intensity, for even in a year like 1886, during which there were only 17 deaths from cholera in the City of Bombay, all vessels arriving at Suez from that port were at certain seasons of the year placed in quarantine!

The Government of India has, however, at length taken the subject up in earnest, and a Resolution in the Home Department (Sanitary), No. $\frac{3}{212-225}$, dated 27th July 1888, deals with the whole question in a comprehensive spirit, and evinces a most just appreciation of its importance. It points out that "the main obstacles which have hitherto impeded sanitary improvement in India lay in the ignorance of the masses and their dislike to any change of custom, and the want of efficient executive agencies, and last, though not least, in the want of funds," and states that although their assistance and co-operation are essential, "district officers have neither the time nor the technical knowledge, nor the opportunities requisite for a comprehensive survey of the entire field of activity which is necessary for initiating and carrying approved sanitary measures into effect," and it therefore appears to be eminently desirable "that there should be established in each province a Sanitary Board, through which the Local Government can operate, and to which, subject in all respects to the orders of the Local Government, shall be entrusted the control and supervision over sanitary works, whether undertaken in urban or rural areas," and these Sanitary Boards are not only to be recognised "as a Consultative body, but also as the executive agency through which the Government acts in the Sanitary Department." The Resolution then refers to the orders issued by the Home Department on Municipal and Local Board Reports for 1885-86, which laid down that "a sanitary survey of each municipality and rural area should be undertaken, and that plans and estimates should be prepared of all the improvements necessary to provide each town or village with an efficient system of water-supply, drainage, and conservancy," and further orders "the provision in every province of simple rules for the regulation of Village Sanitation," and says "it is now in contemplation to render such rules more efficient by legislation. Whenever the existing law makes no provision or insufficient provision for the enforcement of necessary sanitary measures in rural areas, there should be no hesitation in taking the necessary power by legislation," and it calls "attention to the valuable remarks made in 1879 by the Army Sanitary Commission on the practical application of sanitary principles to towns and villages in India."

Speaking as an officer, who was one of the first pioneers of sanitary reform in India, and who has had much practical sanitary experience in that country, I cannot over-estimate the immense importance of such an enlightened Resolution, and I think I am not taking too sanguine a view when I say that the above orders of the Government of India, if they are carried out in the same spirit as they have been conceived, will to the utmost certainty produce results which will not only astonish the world,

but will benefit the natives more materially than any of the many blessings already conferred on them by English Rule.

As I have retired from the service, it is no longer my privilege to address Government in an official capacity, but my long experience in the Sanitary Department in India emboldens me to offer some suggestions which I hope may be useful both as regards the principles, which in my opinion would, if followed, ensure the success of an Act to provide sanitation in the villages in India, and also with reference to what is absolutely important, *viz.*, the provisions which the Village Rules, if they are to have any practical effect on the public health, ought to contain.

It will be observed that the Government of India lays stress on the ignorance of the masses, and their dislike to any change of customs, as being among the formidable obstacles to sanitary reform in India. It therefore seems to me to be most absolutely essential that a Sanitary Act should comprise more than a dry exposition of the law, and it is my strongest opinion that, in order to set the minds of the rural population at rest regarding the intentions of Government, it should define in plain and unmistakable language the purposes for which the Act is passed, and especially the Village Rules should be drawn up in such a way as to instruct the people and show them exactly what the Government wishes them to do, as well as exactly what it forbids them to do.

It must also be remembered that any Sanitary Act in its endeavour to raise the people out of their present debased conditions, and to make them exchange their filthy habits for those in accordance with the demands of decency and health, must contain provisions which must necessarily interfere with their established customs, and consequently with their comfort. It must, for example, provide a cleansing establishment which must invade, if not the interior of the house, at least its environments. Now speaking from my experience as the first Health Officer of Bombay, where it was my duty to organize the Health Department in that City and to put into force the provisions of the first Municipal Act, I know that this procedure on its first introduction must necessarily create a certain amount of irritation, and that a certain amount of odium will attach itself to any Government official who works it; for I found at first that this Act was extremely distasteful to the people, as they did not understand what our action meant, or that we were working for their own good, and they regarded the enforcement of measures so foreign to their habits, and our not permitting them to follow the traditions of their forefathers as an act of zoolum on the part of the Government. Now what took place in Bombay is perfectly certain to occur up-country, and in an intensified form, because there cannot there be European supervision to enquire into every case of complaint made against the Cleansing Department; and though no one is more anxious than I am to see Sanitation introduced into the villages in India, yet I say deliberately and with all the force I can that I would rather see things go on as they are than that a Coercive Act to effect this object should

passed, especially if it is to be worked by Government officials, for ch a procedure would, I am convinced, ensure the failure of any hope effecting the one great object of my life and, indeed, such an Act, if nestly worked, would create so much irritation among the rural pulation that it could not fail to cause serious uneasiness to Govern-nt.

I should not speak so decidedly if I had not the strongest grounds r so doing, but when in India I mixed much with villagers, and know, least those in the Presidency of Bombay well, and what they think d feel about the matter; I always encouraged them to speak out enly, which they did much more freely than if I had been an officer the Revenue Department, and I very respectfully but very emphati-lly warn the Government, what my experience teaches me must ensue, any such measure is passed. The rural population in the Presidency f Bombay at all events is easy to lead, but it will not be driven, and ny attempt to *force sanitation* on them will, I am convinced, be followed y widespread discontent, and the people will be brought to the very erge of disloyalty.

Surely from every point of view it would be better that the villagers ould be systematically taught to identify themselves with the Govern-ent in this matter, and this can only be done by explaining to them e necessity for the movement and by giving them a direct interest its working. Such action is in present circumstances the more pecially needful, as the villagers know quite well that the boon of local lf-government has been bestowed on all municipalities throughout dia, and they would naturally and justly ask why if it is right for the rban, it should not be conceded to the rural population, especially hen they know that many of the so-called towns are no bigger or more fluential than many of the villages. Such a question would be fficult to answer, for, as far as I know, there is no reason why every llage in India, of course under proper and efficient safeguards, should t be allowed to manage its own local affairs as regards sanitation.

I am convinced that no movement would be more in accord with ative traditions than if the Government were pleased to grant the eople in each village power to elect their own Punchayet, which would hus be a really representative body, and which would after a short ime learn to manage, under the direction of the Sanitary Boards, their wn sanitary affairs. This is no new proposal, as the Madras Local Board's Act of 1884 already provides for the establishment of Village Punchayets, the members being either wholly appointed by Government, or partly elected by the tax-payers. If this concession were made by Government, it would be the one best calculated to allay the suspicion with which the rural mind always invests anything strange or new, and it would at once disarm them, and restore their confidence in the good and paternal intentions of the Government, and besides it would transfer the odium I have spoken of from the Government to the elected representatives of the people. Of course the Act or Village Rules would carefully define the mode of election and the duties of the Punchayet, etc.

The position of its members would be one conferring dignity, and which respectable villagers would be anxious to attain, especially Government were pleased to confer on each Punchayetdar a distinct title during his tenure of office, or if it sanctioned a dress of honour be bestowed on the Chairman of that Punchayet whose village at the ti of Jamabundi was found to be the cleanest in the Taluka.

To the Punchayet also would be entrusted the most important a delicate duty of raising in any manner which might be agreed upon by majority of the villagers, in conclave assembled, and subject of course the approval or veto of Government, funds sufficient to pay the wages the village menial servants, whose services would be placed under the command, and to purchase carts, brooms, &c., &c.

The raising of funds in India is always a ticklish matter, but th course I so strongly recommend would cause much less irritation, tha if Government were to order the Collector to levy a rate to meet th necessary expenses, for in that case there would be an immediate outc that it was imposing additional taxation, and great and widespread discontent would be caused. There are in the Bombay Presidency a least three villages where the villagers elected their own Punchayet who with the consent of the majority imposed a house tax on themselve to meet the expenditure necessary to keep the village clean. In one o these this movement was entirely spontaneous, without any pressur whatever being put on the villagers by any Government official—and i my strongest opinion the example thus set by the natives themselv should be followed by Government in introducing an Act for Villag Sanitation. Surely this course would be far more politic in every sens than that Government should attempt to do the work itself, either through the agency of its own officers, or through villagers appointed b Government, whom the people would know were controlled by th irresistible power of the Collector. Such a course would be mos unpopular, and I also know that the people hate and dread any inte ference with their local affairs on the part of the Magistracy, as woul be the case if Magistrates were placed on village committees, &c. It is moreover, I respectfully submit, most unwise and unfair that the same man should occupy the position of accuser and judge. As an old health officer I can speak most decidedly as to the paramount importance of having an impartial judge to decide cases between the accused and the servants of the cleansing establishment; and in my judgment it would be far better to enlarge the powers already conferred by, for example, Bombay Act VIII of 1867 on the Village Patel, and to make him the Village Magistrate, to try all cases of offences against the Village Rules, and I would suggest as the surest means in my experience of getting sanitary work done, that he be empowered to inflict a continuing penalty, however small the amount, for every day after the date fixed by the notice had expired, and during which the nuisance remains unabated. Let the accused by all means have the right to appeal from his decision to the Mamlatdar, or the District Magistrate, and consequently to the High Court. Such a procedure would be in strict accord-

bep with established law and custom. Then it is most essential that su Government should have the power, through such agency as it may of pleased to determine, to inspect the work of the Punchayet and their ho ants, and to see that they really do their duty, and that the provisions po the Village Rules, especially as regards water-supply, dnraiage, and me servancy, are efficiently carried out, and by all means introduce what the existing Municipal and Local Board Acts are popularly desig- fo ed "The Bludgeon Clauses," and let the Act give Government full at ver, on default being proved against a Punchayet, to suspend it, and an perform what is necessary at the expense of the villagers.

o It must never be forgotten that Government may pass what Acts it o eases to enforce sanitation in the villages, but unless the people them- c ves co-operate to give effect to their provisions, they will remain a if ad letter, except, as I cannot conceive nowadays to be possible, actual o rce is used to compel their adoption; but a Sanitary Act embodying a e principles I advocate would afford the best chance of practical sanita- b on, being at length really introduced into the villages of India, as it v ould be administered by the people themselves without direct inter- rence on the part of Government, but under its advice and counsel.

sl Doubtless, difficulties would and must be met with at first, but under m e judicious and kindly management which Government would assuredly ex ercise, these would soon be overcome, and in any case the experi- n ent—for any move in this direction must at first be an experiment—is rth trying, for if it succeeds it must surely be conceded, that it is tter than any other plan; and one that would at least not excite the position of the masses.

Having thus stated the principles, which in my strongest opinion it ould be well to adopt, in framing a Sanitary Act for India, I pass on the consideration of the Village Rules.

In the orders of the Government of India above quoted, it will be served that each village is to be provided with "an efficient system water-supply, drainage, and conservancy." This can only mean that ne system is to be such as will prevent disease and improve health, for if does not accomplish this it cannot be "efficient." The problem then, which faces us, and which must be solved, is, first: What system of practical sanitation in the villages will be efficient, *i.e.*, sufficient to prevent cholera and the other malignant fevers which at present cause such a very heavy mortality in them? and when this point has been decided, the further question arises,—Is it possible to carry them out?

The following Rules to introduce sanitation into villages in India embody the observation and experience of a life-time, and I am convinced, if the measures taken to give effect to the suggestions of the Government of India are to be efficient, that there is not one single rule in them which can be safely omitted, and I am equally confident that it is perfectly feasible to carry out in the villages the provisions of each Rule. I think I may claim that they embody the suggestions of the Army Sanitary Commission, and that they contain clear and definite

instructions, as it is so vitally important that they should, and that they show the villagers exactly what they are to do, as well as what they are forbidden to do.

I have endeavoured also to instruct them and to explain the reason for each rule. In some instances the rule exhorts rather than compels, and several things are allowed, out of deference to native customs and prejudices, which perhaps, strictly speaking, ought to have been forbidden. The penalties spoken of in several sections are not specified, as of course they would be included among the sections of the Act. It may be said that the Rules are too long, but they necessarily embrace very many points, and deal with some of the most prominent wrong conditions, commonly met with in villages, which affect and destroy health, and which, if any practical good is to follow, must be clearly stated. I know as an old health officer, who has seen perhaps more cholera than most men, that it is simply idle to expect that it or the other intense fevers of India can be eradicated by *half measures*, and in my opinion it would be better to let things go on as they are than to enact Rules which do not strike at the root of the wrong conditions, and which do not deal with the causation of disease.

I have added a preamble, as I am convinced that some such preface would be really useful in allaying distrust on the part of the rural population. These Rules are intended to apply to all villages containing more than 500 inhabitants, as in them will be found a sufficiently intelligent community to appreciate their value. It must be remembered that many of our so-called villages are in reality towns, containing more than 5,000, and some more than 10,000 inhabitants. At the same time they can with perfect propriety be applied to villages containing between 200 and 500 inhabitants, whilst for villages with a population under 200, which usually consist of a collection of huts occupied by Bhils, hill men, &c., &c., the Sanitary Board of the Province might draw up simple regulations, principally prohibitions, to ensure the conservation of the water-supply, the cleanliness of the surface close to the huts, and to compel the villagers to go to selected places for the purposes of nature. I have also incorporated in the Village Rules some simple instructions regarding the action required to be taken during outbreaks of cholera, which I drew up, whilst Sanitary Commissioner of Bombay, for the information and guidance of the village officers, and which were approved by Government and circulated throughout the Presidency.

DRAFT VILLAGE SANITATION BILL.

PREAMBLE.

Government having taken into its most earnest consideration the very heavy mortality which year by year takes place among the rural population, and finding that it is due to the extreme prevalence of disease, especially of fevers, bowel-complaints, and in some years of cholera and small-pox in the villages, has been pleased to determine that in the interests of the rural population committed to its charge this serious state of things can no longer be permitted to continue, and as this excessive death-rate has been clearly traced to the filthy conditions in which the villagers live, and is principally caused by the rubbish, dirt, and filth which have been allowed to accumulate in the back yards, and by the sides and fronts of the houses they inhabit, as well as by the too frequent impurity of the water they drink, and by the other unwholesome matters which are so commonly met with in villages. It has therefore resolved that for the future cleanliness must be maintained in all villages, and that the surface and surroundings of each village, to which this Act is applied, must be daily cleansed, and that the water-supply must be improved, and that such other measures as may be determined upon must be taken with the view of improving the health of the villagers, and in furtherance of this object Government is pleased to publish Rules, which will clearly explain to the villagers exactly what they have to do and what they are forbidden to do.

Government believes that in this its endeavour to benefit the rural population it will have the support and assistance of all right-thinking persons, and has therefore resolved to grant to the villagers the boon of local self-government, which the Most Noble the Marquess of Ripon, when Viceroy, bestowed upon all Municipalities throughout India. Government will, therefore, permit the villagers to elect from among themselves a Punchayet for each village, whose duty it will be to see that the provisions of this Act and of the Village Rules are properly and efficiently carried out. The members of the Punchayet will thus be in a position of great trust and responsibility, as it will also be their duty to raise funds, subject to the approval of the Government, in any way that may be decided by a majority of the villagers, so as to pay the establishments, &c., necessary to keep the village clean, and to meet the expenditure entailed by this Act.

VILLAGE RULES.

Chapter I.

Rules to provide for the selection and management of places to be set apart—1st, for the use of the villagers as places of resort for natural purposes; 2nd, for the deposit of all rubbish, dirt, garbage, filth other than night-soil, collected in the village; 3rd, for the burial of the carcases of dead animals.

Boundary marks not nearer than 250 yards to the village to be set up all round it, and no filth to be deposited within this boundary. Sites to be selected for the performance of the offices of nature, the deposit of filth and rubbish, and the burial of the carcases of dead animals.

1. Subject to the approval of such officer as Government may be pleased to appoint, the Punchayet shall set up boundary marks round, but not nearer than 250 yards to the village, within which no deposit of any kind of filth shall be allowed. It shall also select at least three sites for the undermentioned purposes, which shall be outside the boundary marks, and at the distances hereafter named. These sites shall be to leeward, and in the Bombay Presidency, if possible, to the south of the village.

Site or sites for natural purposes.

2. The first site shall not be nearer than 250 yards to the village, and shall be assigned for the use of the villagers as a place for resort for the performance of the offices of nature. If the village is a very large one it may be necessary to allot more sites for this purpose, so that the villagers should not have too far to walk to relieve themselves. Each site shall be divided into two portions, one for men and the other for women; or, if preferred, two separate sites may be allotted, one for each sex. The area must necessarily depend on the size of the village, but the boundary of each site shall be enclosed by a thick bramble hedge or wall, and care must be taken, either by the use of turnstiles or other convenient arrangements, to ensure the exclusion of cattle from the interior of the site, the approach to which should be marked out by stones which have been lime-whited, so as to be readily distinguishable at night.

When places of natural resort are provided, any one who performs the offices of nature in the village or within the boundary marks will be punished.

3. After the site or sites have been provided it should be notified that any villager caught easing him or herself in any street, thoroughfare, or anywhere inside the village, or within the boundary marks, except in an authorised privy, shall be dealt with as hereafter provided.

How the site set apart for natural purposes is to be treated.

4. If the surface of the soil will admit of it, a trench one foot deep by one foot wide, and as long as required, shall day by day be dug by the village menial servants within the enclosure at each site. Every person, after using it, shall draw with a powra, or kick with his foot, a little earth over what has come from him, and when the site has been completely trenched over, a fresh plot of ground must be selected and treated in a similar way, and the former site must be ploughed up crosswise, and be planted with crops. The cultivation of the manured field is an essential part of this scheme as growing plants rapidly assimilate the manure, and the ground will again become sweet, whilst the crops from these fields will be far more luxuriant than those grown on fields which have not been thus manured.

All night-soil collected in the village to be daily buried in a trench.

5. If there are any privies, either public or private in the village, their contents, as well as all the night-soil collected in it, shall be daily brought to a trench and covered over with a layer of fresh earth.

Method of disposal of night-soil in places where the soil does not admit of trenches.

6. In places where the soil will not admit of trenches being dug in it, the villagers must perform the offices of nature on the bare ground; but as soon as they have retired the village servants shall throw over the night-soil the ashes or burnt village sweepings, or which have been collected from the chulas in the village, or in their absence shall cover the night-soil with fresh earth, so as to make it into a solid compost, which they shall afterwards convey to a selected field for burial; but if there is no place where it can be buried within a reasonable distance of the village, it should be carted away to a waste place and deposited on the ground, but not near a water-course, and not nearer than one mile to leeward of the village.

A site to be selected for all filth other than night-soil collected in the village.

7. The Punchayet shall also select a second site, which shall not be nearer than 450 yards to the village, to which shall be brought all the liquid and solid filth other than night-soil, rubbish, stable litter, manure, &c., &c., collected in the village, and which shall be there deposited.

Plots of ground inside this enclosure may be assigned to individual villagers for temporarily stacking manure.

8. The Punchayet may, if it consider it desirable, allot to individual villagers a plot or plots of ground within the enclosure of this site, for the purpose of storing thereon stable litter or other manure belonging to them before it can be carted to their fields.

9. The Punchayet shall also select a third site, which shall not be nearer the village than 450 yards, to which the carcasses of all animals which die in it shall be brought, to be there buried under not less than 6 feet of earth. Site for burial of carcasses of dead animals.

10. Great care must be taken that the places set apart for the performance of the offices of nature, for the deposit of filth other than night-soil, and for the burial of the carcasses of dead animals are *not* situated on high ground—or near any nala discharging into a source of drinking water. This is most important, because otherwise the filth would either run into the nala, or else, when rain fell, would soak through the ground, or be carried over the surface, and thus find its way into a source of drinking water. These sites are NOT to be on high ground.

Chapter II.

Regarding sources of drinking water.

11. All sources of drinking water, whether from tanks, wells, running streams, dry water-courses, reservoirs or cisterns, from which the villagers draw their drinking water-supply, are hereby placed under the control, management, and jurisdiction of the Punchayet: and it is one of its most important duties to preserve the purity of the water in them, and to prevent in every way it can its contamination; and it shall bring in the manner hereafter provided all offenders against these rules before the village Patel for punishment, and in the event of any of the above named sources being found to yield impure water, the Punchayet shall take immediate measures to improve the same, and shall either by beat of battakee, or by attaching a notice in the vernacular of the district in a conspicuous place near it, forbid the further use of such source, either temporarily or permanently. All sources of drinking water made subject to the control of Punchayet.

12. Experience has proved that the water in open tanks is always impure, because it is impossible to prevent dust, &c., being blown into the water, or men or animals from going into it, or the surface filth on the gathering ground from being washed into it, and therefore it is necessary to take immediate steps to improve such water if the villagers are dependent on it as a source of drinking water. In every village therefore where the only source of drinking water is from a tank, or where the villagers use the water of any tank for drinking purposes, the Punchayet shall, as soon as possible after it is first appointed and within three months of such Open TANKS.

date, cause to be dug one or two or more wells on the sides of the tank, but at a distance of not less than 15 feet from its margin, so that the water from the tank in its passage to the well may become purified by filtration through that thickness of earth. It is also essential that the margin of the tank should be covered with grass. It would be better if it were paved, but this would be much too expensive in many villages, and grass can be grown in most villages around tanks.

Old wells.

13. The following directions of the Army Sanitary Commission regarding existing wells deserve great attention: "The ground about every well should be examined. If the ground is foul and filth-sodden no well dug in it can yield good water. If in a house or compound there is a cesspit together with a well, both should be filled up. It may be taken for granted that the cesspit has so fouled the subsoil that no good water can be got from it. When wells are the source of the water supply the safest course is to provide a new well. It should be dug in clean ground away from all nuisances."

New wells.

14. In digging new wells the following rules by the Army Sanitary Commission are *in all cases* to be strictly followed:— "The well is dug and built up in the usual way, but when it comes within eight or ten feet of the surface the tube must be coated outside with puddle or cement to cut off the upper portion of the subsoil water. The tube of the well should be raised two feet above the ground level and covered with a roof. The ground round the well should be coated with concrete, or paved and sloped away from the well to open channels to convey the wastage water to a distance." Instead of a wooden roof the top of the well may be domed over like the old Mahomedan wells at Bijapur, or as in some ancient Hindu wells, of which there is a fine specimen at Mhow. Openings should be left in the dome, through which, as recommended by the Army Sanitary Commission, the water can be drawn up by means of an iron bucket attached to an iron chain, and worked over a hand windlass. Iron chains and buckets are much cleaner than the ordinary mode of a rope and brass lota. In "Ads," and indeed around every well, old as well as new, a channel to convey away the wastage water to a distance *must* be made. It is also a good plan, as at Neriad, to fix iron bars across the tube about two or three feet below the top, and to attach iron chains and footrests to the inner sides of the tube, so that persons who fall in accidentally may have the means of saving themselves.

Wells not to be below trees.

15. No well should be situated below a tree, as not only leaves but the droppings of birds and of animals, such as

monkeys, squirrels, &c., fall into the water and render it impure. Birds also frequently build their nests in holes situated in the sides of a well, and of course the water is rendered impure by their droppings, feathers, &c., &c. If any existing well is below a tree a cover must at once be put over it.

16. It is expressly forbidden to construct any new well with steps leading down into the water, as it has been found that the practice of going down steps into the water with naked feet and legs exposes persons so doing to a very great risk of contracting Guinea worm. All existing step-wells should at once have the approach leading into the water bricked or walled across, and the well should be converted into a draw-well. Step wells prohibited.

17. If the drinking water is obtained from a flowing river it is the duty of the Punchayet to take efficient measures to preserve the cleanliness of the banks as well as the beds of all nalas, streams, or water-courses which discharge into it, and to prevent their contamination. Flowing rivers.

18. If the villagers draw their drinking water from Jheels dug in the dry bed of a river, the Punchayet shall take especial precautions to protect it from defilement, and no one shall be permitted to resort to it for the purposes of nature, or to cultivate its bed, or to grow melons on it, or to manure its surface, especially above stream. The place where the Jheels are situated shall be enclosed by a thick bramble hedge or high ramps of sand so as to prevent cattle from fouling the water. A separate place for watering the cattle shall be provided. Jheels.

19. Tankas or cisterns for storing rain water under houses are dangerous, first because evaporation is constantly going on from the surface of the water, so that the residents live in a moist atmosphere; second, because it is almost impossible to prevent filth from being washed into them from the roof; third, because the mortar or cement used to plaster the sides cracks and gives way in places, and there is constant and great danger of soakage of impure matter into the water so stored from the subsoil outside; fourth, because both in old and new tankas rats and other vermin make their way to the water, often through drains, and impure gas finds its way into it. Their use should therefore be discouraged as much as possible, but until a plentiful supply of pure water is provided they may be allowed, but they should be inspected by the servants of the Punchayet, and should be cemented inside once a year, and be cleaned out before the rains, and they should be covered with a cemented dome, through which a ventilating shaft should be carried up through the roof. Tankas or cisterns below houses.

They should not be covered by wooden rafters, which rot and are liable to be infested by insects.

Separate sources of drinking water to be allotted to the low castes.

20. It shall be the duty of the Punchayet, as soon after commencing work as possible, and certainly within one month afterwards, to allot for the use of the low caste people attached to the village a separate source or sources of drinking water for their sole use, if they do not already possess one, and no deviation from this rule can be permitted. It must also be remembered if both Mahars and Mangs are attached to the village that a separate source must be allotted to each, as they will not drink water from each other's well.

Places to be reserved for ablution purposes, washing of clothes, and watering of cattle.

21. The Punchayet shall also set apart, if possible, a tank, or such other place as may be most convenient for the use of the villagers for bathing, washing of clothes, and for watering cattle. If, however, there is only one tank in a village, then until new wells, as provided in Rule 12, are dug, the water for the purpose of ablution, washing of clothes, and the watering of cattle, should be raised by a Persian wheel, and distributed into troughs, which should be so placed that the waste water from them cannot drain back into the tank, and every person who bathes, or washes clothes, or waters cattle in, or who defiles in any other way, any tank not reserved for the purpose, shall be punished in the manner hereafter provided.

Chapter III.

Rules to provide for the daily cleansing of the village site and for the removal of filth therefrom, and instructions how to prevent some of the nuisances most commonly met with in villages.

Village site up to boundary marks to be daily cleaned.

22. One of the principal duties of the Punchayet is to take effective measures to ensure the daily cleansing of the village site up to the boundary marks, and to prevent nuisances being committed on it.

Village menial servants placed under the command of the Punchayet and their duties.

23. To enable it to perform the first-named of these duties, the village menial servants are hereby placed under its command, and it shall be their duty daily to sweep the surface of the roads, lanes, thoroughfares throughout thevillage, &c., and to keep the surface not only inside, but on the outskirts of the village up to the boundary marks, clean; to clean the surface of the compounds, back enclosures, yards, and at the sides and fronts of the houses; to collect and remove all filth of whatever description therefrom and convey it to

the place appointed; to sweep out, flush, and remove all dirt, silt, &c., from the surface drainage channels, and where they exist, from the roadside gutters; to empty cesspools and remove their contents to the place appointed; to clean out and remove the night-soil from every privy in the village, whether public or private; to sweep up all night-soil which may have been passed by squatters in waste places, or on the sites of ruined houses, or on the thoroughfares, &c., in the village, and to convey it to the place appointed; to collect and remove all stable litter, dung, dry and liquid refuse, garbage, offal, &c., to the place appointed; to cut down all prickly pear wherever met within the boundary marks, and to bury it under three feet of earth; to cut down and remove all rank vegetation, &c., and generally to perform such other acts as may be necessary for the maintenance of thorough cleanliness in the village.

Hereditary menial servants to receive a money payment over and above baluta and in districts where there are no hereditary menial servants the scavengers are to be paid according to a scale sanctioned by Government.

24. For the performance of these duties, which will demand their full time, the menial servants, if hereditary, shall receive a money payment over and above any emolument they derive from land or from grain given as "baluta." The amount of this money payment, after deducting the estimated equivalent of the baluta, shall be settled on the basis of the ruling wage of a daily labourer in the district. It of course must vary. In districts where there are no hereditary menial servants, the amount of wages to be paid to each menial servant shall be calculated on the ruling wage of a daily labourer in the district. In all cases the scale of wages or of money payment to be paid to each menial servant must receive the sanction of Government, who may either increase or decrease it as seems to it to be proper and just to all the parties concerned.

Nuisances commonly met with in villages and which are to be stopped.

25. The following rules enumerate some of the nuisances commonly met with in villages and which Government wishes to be stopped. The Punchayet should therefore inform the villagers to this effect, and point out to them that these Rules have been drawn up with the sole object of benefiting them and their families, and that the filth which is most dangerous to their health is the filth produced by themselves, and existing in the immediate vicinity of their houses.

Micturating in wrong places.

26. For example, it is too often the custom for the inhabitants to micturate on the ground alongside the walls of their houses, or along the sides of the roads, &c Now urine contains substances which quickly putrefy, and as it soaks into the subsoil it renders it and the air breathed by the household impure.

Defiling surface with night-soil.

27. Then again, old persons of either sex, and even adult men and women as well as children, during the dark hours of

the night or in the very early morning before it is yet light, ease themselves in the back-yards of their houses, or in the roads in front of houses, or on the site of fallen houses, or on waste places, or on any other convenient spot. This practice is most dangerous, and must be stopped, as it taints the air with dangerous emanations, and it fouls the soil with dangerous matter.

Liquid and solid household refuse.

28. Then again the liquid kitchen refuse frequently is conveyed through a closed pipe to a cesspool situated close alongside the house in the back yard, whilst all the solid household refuse such as vegetable ends, the entrails of fish, or fowls, bones, leaves which have been used as dinner plates, currie, rice, &c., are usually thrown out on to the ground near the back door. All such and similar substances readily putrefy, and make the soil, subsoil, and atmosphere impure, and this foulness is intensified by the inhabitants performing their necessary ablutions generally whilst standing on a flat stone near the back door. This practice besides fouling the water in wells, renders the subsoil very damp, and is a fertile source of fevers and other diseases.

Villagers to be warned that such acts are prohibited.

29. The Punchayet shall therefore at once take measures to prevent such nuisances being committed in the village, and it should notify to the villagers that Government positively forbids them—1st, to relieve nature either by micturition or by easing themselves in places such as are named above, where it would be of detriment to the public health to do so, or in any other place where such act is forbidden; 2nd, to deposit dirt of any description except in places or receptacles assigned for its reception.

Public urinals.

30. The Punchayet shall select and enclose suitable places for the use of each sex in different parts of the village, to which the villagers should retire for the purpose of micturition, and at which thick earthenware or iron vessels, which have been dammered inside and out should be placed, which must be emptied regularly every day by the village servants. The Punchayet may also permit villagers to keep a similar utensil on a bricked or paved surface in their compounds, which shall likewise be emptied every day. After public urinals have been provided in sufficient number for the size of the village, any person found micturating in any other place than a privy, proper utensil, or at a public urinal, shall be dealt with in the manner hereafter provided.

All villagers to visit places assigned for purposes of nature.

31. The Punchayet shall likewise make public proclamation that after a certain date all villagers must as a rule perform the offices of nature only at the place or places assigned for this purpose, outside the boundary marks round the village, but circumstances may possibly arise when it may

be desirable to allow the erection of public or private privies in the interior of the village, when the following regulations regarding privies shall be strictly enforced.

Pit privies prohibited.

32. In the first place all pit privies, which in Guzerat are called Datan privies or Khalkowas, are hereby strictly prohibited, as the ordure collected in them fouls the subsoil and water-bearing stratum, whilst the constant emanations given off by the decomposing night-soil seriously taints the atmosphere around houses, the Punchayet shall therefore give immediate notice to the owner of every pit privy existing in the village to have it filled in with clean earth, within six months after this Act comes into operation, and on no account and in no circumstances is permission to be given for a new pit privy to be made.

Public better than private privies. Punch privies.

33. It is advisable not to have any privies at all in the compounds. Even the cleanest privy emits an offensive odour, and all such smells near a house are unwholesome. It would be safer if the Punchayet were to erect public privies on convenient sites for the use of villagers. If, however, several villagers are desirous of having private privies, permission may be given to them to erect groups of privies on convenient sites, on open places outside the compounds, but inside the village, the door of each compartment being provided with a key, so as to reserve it for the sole use of each family.

Regulations applicable to all privies.

34. If, however, circumstances arise where the Punchayet exceptionally permits the erection of private privies in the back yard of the houses, the following regulations must be strictly observed :—

Privies to be detached.

35. No privies shall be situated within the walls of a dwelling house, but it shall only be allowed to be erected in a building standing by itself, and separated from the house and any adjacent house, by an air space of at least three feet all round.

Site.

36. The site shall be selected with reference to its capability for the privy being cleaned by a halalcore without entering the compound. In no case shall a privy be situated in a verandah of a house, or open directly on to a public thoroughfare.

Construction of privies.

37. In the construction of a privy no lime or masonry shall be used, as when urine falls on lime offensive ammoniacal salts are produced, and it is impossible to keep the place clean. The roof should slope towards the south-west, but be open towards the north-east and at the sides. It should be supported by four wooden uprights, the two at the rear being one-and-a-half or two feet higher than the two in the front, which should be let into the ground after the bottom ends have been well dammered. There should be two foot-rests,

3 feet cube, consisting, if possible, of stone, but if that is not procurable, of bricks covered with dammer. In the centre an iron receptacle, similar in pattern to the one sanctioned by the Government of Bombay for a native privy, should be placed, which should stand if possible on a paved, bricked, asphalted, or at least dammered surface. The receptacle consists of two chambers, the upper one of which retains the night-soil, and is perforated to allow of the ablution-water and urine flowing into the lower chamber.

Baskets.

38. Baskets are not to be used as receptacles for night soil in privies, and are only allowed in exceptional circumstances, when they should be cow-dunged inside and out, so as to become water-tight. They may, however, be required to be brought into a house for the use of children who are too young to go to the appointed place, or for persons who are sick, or too feeble to walk the distance, or for purdanashin women. If used they must be kept on a paved or bricked surface in the back yard, and the ashes from the chulas must be thrown over the night so il, which must be removed very day to the appointed place.

Rules for ce pools.

39. Besides the above Rules regarding privies, the Punchayet shall cause the following instructions regarding cess-pools to be rigidly adhered to :—

Danger of pools.

40. Cess-pools at present are frequently built just outside the walls of a house in the back yard, and are frequently connected with a nani or mori inside the house on the ground floor, or if it is an upper-storied building with the nani on each floor by means of closed pipes. This practice is most dangerous to health, as all the foul air from the decomposing matter in the cess-pool is drawn up into the rooms by the warmer air of the apartments, where it is breathed by the inmates. The Punchayet should therefore take immediate measures to substitute for the closed pipe an open channel, so as to allow the foul air to escape at once into the external air. The down take channels should not discharge direct into the cess-pool, but should terminate a foot above an open gutter situated at least two feet on one side of the cess-pool, and opening direct into it.

Cess-pools should be open; If closed to be ventilated.

41. All cess-pools should be open at the top, but if from unavoidable circumstances of position the Punchayet, in exceptional and rare instances, permits a cess-pool to be covered, a large ventilating pipe of not less than 4in. in diameter should be carried from the top of the cess-pool up the sides of the house, or, if the roof is a sloping one, in a vertical direction so as to terminate not less than ten feet above the line of roof. The utmost care must be taken that the pipe does not end below the windows of an adjacent house.

42. All cess-pools, including those that are covered, must be cleaned out daily, and the Punchayet should be careful to see that they are properly cemented on the inside so that no soakage into the subsoil can take place. They should also not allow cess-pools to be constructed close to the foundations of a house, to which, if possible, they should not be nearer than ten feet.

Cess-pools must be daily cleansed and properly cemented inside.

43. But in every village the Punchayet shall at once take measures to provide surface drains for the purpose of carrying off the storm water and keeping the village site as dry as possible. When these have been provided the Punchayet shall cause each house to be connected with a surface drain for the purpose of carrying off the liquid refuse and the bathing water, and, when this has been done, shall cause all cess-pools to be filled in with fresh earth at the expense of the owner.

All cess-pools to be filled in as soon as there are surface drains.

44. The surface drains shall consist of open shallow water-tight channels, either placed by the side of a footpath, or, if there is no footpath, by the side of the road. The rubble masonry roadside gutters, as usually seen, are very dangerous, as they follow the inequalities of the house fronts, and invariably keep the foundations of the adjacent houses very damp. Surface drains should always be laid in straight lines, with a gentle bend at each change of direction. The instructions of the Army Sanitary Commission regarding them are as follows :—"The materials should be the best and cheapest to be obtained on the spot. Cut stone, or concrete, or asphalte, might be used, or masonry or close-fitting vitrified bricks, but in any case it is absolutely necessary that the channel itself be laid true, have a sufficient fall, and that all the joints should be water-tight. Open cuts in the earth are of no use, but are on the contrary to be avoided, as leading to a damp unwholesome state of the subsoil. Shallow saucer sectional surface drains can be kept clean by sweeping or by throwing water into them. With due care in cleansing with fresh water there would be no risk in allowing water used by households for washing and bathing to run into the surface drains. The surface drains should discharge their contents into open impervious shallow surface sewers, by which the water could be conveyed to a distance from the village, and used at once for irrigating land, and so be finally disposed of."

Surface drains.

45. The Punchayet shall take especial care to prevent the flow of water in the surface drains being intercepted by house-owners placing any articles in them, and it shall not be lawful to cover over a drain, or to place anything over it, except, if access is required to a house, a plank not more than 18in. in width may be placed across such drain.

Obstruction in and over drains prohibited.

Sholapur system may be exceptionally tried.

46. If open drains are not found to answer, or in thoroughfares where there is much wheeled traffic, the Punchayet may adopt a system of partially closed drains, laid under the surface of the roads, so successfully introduced in parts of the town at Sholapur, which are described in the Inspection Report for 1887 on that city.

Bathing places.

47. All places in the back yards where the residents usually bathe must be paved or covered with concrete, and be connected with a surface drain, but if situated inside the house, the water from them should flow out through an open, and not through a closed, channel on to a paved or concrete surface, communicating with a surface drain.

Solid refuse.

48. The solid household refuse should be carried out of the houses and be deposited in dustbins to be erected by the Punchayet on convenient sites outside, but near, the houses in every street, &c., throughout the village, but if in exceptional circumstances the Punchayet permits it to be deposited within the compounds, it must be placed in an iron receptacle, or deposited on a paved or bricked surface in the backyard, not less than four feet square. It must not be thrown out on to the bare ground. It must be daily removed from the dustbins and receptacles by the village servants.

Dead animals.

49. The carcases of all animals which die in the village shall be removed at the expense of the owner by the village servants to the place set apart for the disposal of carcases, and be there buried under six feet of earth. The flesh shall in no circumstances be eaten by Mahars or other low caste people.

The storage of night-soil and dung near houses prohibited.

50. It shall not be lawful to store night-soil near human habitations, or anywhere within the boundary marks, nor shall it be lawful to keep the dung of cattle in stacks near houses. Any person contravening this rule shall be dealt with in the manner hereafter provided. Of course cow-dung cakes to be used as fuel may be kept inside houses, but it shall not be lawful to spread wet cow-dung over the ground or to affix it to walls inside compounds. Cow-dung cakes should be manufactured outside the village boundary marks.

Paving of streets, &c.

51. It is very desirable that where stone is procurable the surface of the streets and thoroughfares should be paved, and that where it is not procurable, their surface be raised in the centre and be well rammed, so that water will not lie on them but run easily off to a drain.

The residences of low caste people to be frequently inspected by the Punchayet.

52. It shall be one of the most important duties of the Punchayet to visit at frequent intervals, and not less often than twice a week, the Mahar or Mang Vada attached to the village. The greatest care is to be taken that these places are kept scrupulously clean, that the water supply is good and

Ventilation in upper-storied houses.

57. If the house is upper-storied, openings at least 3′ long and 1′ broad should be made in the external wall in each room on the lower floors, on a line with the ceiling or rafters of the upper room. If one of the walls of these rooms is a party wall, no opening should be made in it but only in the external wall.

Windows.

58. It would be better if these openings were converted into windows. It is easy to knock a hole in the wall and to insert a window frame, say 3′ by 2½′. A window of these dimensions would afford good means of ventilation, and add immensely to the purity of the air, and would thereby improve the health of the inmates, especially of the children.

Cubic space of rooms not to be encroached upon.

59. In some houses in order to economize space, it is common to find a wooden staging which extends perhaps more than half way up the wall, on which fowls roost, and firewood, cow-dung cakes, odds and ends, are kept. This practice seriously interferes with the cubic space of the room, and consequently with the amount of air in it, which ought to be kept for respiration by the inmates. The Punchayet should therefore especially warn the villagers of the danger caused by these lofts.

No fowls or animals to be kept inside houses.

60. No fowls or animals, such as goats, sheep, horses, ponies, mules, donkeys, cows, buffaloes, &c., should be allowed to be kept in the interior of houses, as by so doing the air which the inmates breathe is rendered very impure, not only by the droppings of the animals, whose urine also soaks into the floor and finds its way into wells, but also because they abstract a very large quantity of the air which ought to be used by the household, and it is very well known that air is rendered very impure by the respiration of animals.

All animals must be kept in a stable outside the house.

61. In all cases such animals must be kept in a stable outside the house. It is very desirable that arrangements should be made to stall all cattle in a field outside the village, but if that cannot be done and they must be kept for safety inside the village, they should be stalled in a stable erected on some open ground.

Floors of stables.

62. The floors of all stables shall consist of well rammed earth or clay, and until the stable is connected with a surface drain provision should be made to catch the urine passed by the animals in gurras, and to convey it to the appointed place.

Litter to be removed frequently.

63. The stable litter and dung, if required for agricultural purposes, must be periodically, and not less often than twice a week, removed to the fields. The surface of the ground on which it is deposited in the stable-yard should be paved or bricked, and it should be drained.

Chapter V.

General regulations for the promotion of cleanliness and other measures necessary for the well-being of the village.

Fallen houses.

64. The Punchayet shall take measures to compel the owners of all ruined or fallen houses to level the site and to keep the surface clean and free from rank vegetation and filth, and shall order it to be forthwith enclosed, either by a sufficient wall or fence, so as to prevent its being used as a place of natural resort; and any owner failing to comply with the orders of the Punchayet shall be dealt with in the manner hereafter provided.

Rank vegetation and prickly-pear.

65. All low brush wood, jungle or rank vegetation growing inside or on the outskirts of a village, shall be cut down and removed by the village menial servants, and all prickly-pear, whether growing inside or on the outskirts of a village, shall be cut down and immediately buried under three feet of earth. It is no good to burn it—it must be *buried* under three feet of earth. It is necessary to eradicate this noxious plant, because it not only grows to such a height as to frequently interfere with the perflation of the village, but it also affords a convenient shelter for persons to frequent as a place of natural resort, whilst it permits all kinds of filth to collect below it, where it putrifies, and is difficult to dislodge, and then, when the rains set in, is liable to be washed into a source of drinking water.

Trees.

66. The lower branches of trees should be lopped so as to improve the external ventilation, and trees should be planted on wet and damp ground near a village, so as to dry the ground and purify the air.

Excavations, &c.

67. No new excavations are on any account to be permitted in or near a village, and all existing ones must either be filled in or drained. If the villagers want earth to make mud for building purposes, they must excavate it beyond the boundary marks. When stagnant water begins to dry up, the exposed mud becomes a fruitful source of fever; all marshy ground therefore near a village should be drained.

Wood stacks.

68. The Punchayet shall regulate the height of wood stacks in the village and not allow any stacks to be so high as to interfere with the perflation and ventilation of adjoining houses.

Pigs.

69. No pigs shall be allowed to wander about the village or its outskirts, and their owners shall be compelled to keep them in proper styes, which shall be so situated and be so kept as not to cause a nuisance.

Slaughter-houses

70. No slaughter-house of any description shall be allowed inside the village, and no animals except as hereafter permitted shall be slaughtered in it, or anywhere except in a slaughter-house licensed by or belonging to the Punchayet. On the occasion, however, of religious ceremonies the Punchayet may permit sheep or goats to be slaughtered as sacrifices on payment of a fee of one rupee per animal; but in all cases ashes must previously be spread thickly over the place where the animal is to be slaughtered, and ashes shall also be poured over the blood so as to prevent its soaking into the ground, which must afterwards be swept and well sluiced with water so as to clean it.

Offensive trades.

71. All offensive trades, such as tanneries, potteries, tile burning, lime burning, indigo dyeing, wool sorting and cleaning, catgut making, cow-dung manufactories, and the like, shall be permitted only when their owners have received a license from the Punchayet. These trades shall be removed from the interior of the village and not be allowed to be established on any site nearer than a quarter of a mile, and only on the south of it. The Punchayet shall frequently inspect such places and not permit any heap of offensive refuse to be kept, and they shall see that the premises are kept clean and are drained.

Food supplies to e frequently inpected by the Punchayet.

72. It is very desirable that there should if possible be a public market, and wealthy villagers could not give their fellow-villagers a greater boon than a good public market, which could be called after their names, but until one has been provided the shops in which articles of food are exposed for sale should be frequently inspected by the Punchayet, and if any article of food is unfit for human consumption, it shall be confiscated and the vendor shall be dealt with in the manner hereinafter provided. Great care must be taken to prevent the sale of, and to destroy, all under-ripe or over-ripe fruit which is offered for sale, especially when cholera is about.

Adulteration of milk or ghee.

73. The mixing of water with milk, or the mixing of any foreign substance with ghee, is prohibited, and any person who offers or exposes for sale such adulterated milk or ghee shall be dealt with in the manner hereinafter provided.

Burning ghats.

74. Suniasis shall not be buried, and the bodies of other Hindus shall not be burnt above stream, or in the bed or on the bank of any river, watercourse, or tank from which drinking water is drawn, or anywhere except on such sites as may be selected by the Punchayet and approved of by Government; in all cases the burning ghats shall be below the site from which drinking water is drawn.

75. No burial-ground shall be allowed inside a village or on the banks or sides of tanks, or on the gathering ground of any tank from which the villagers draw their drinking water; all such at present existing shall be closed when new ones are provided, and when the order of Government has been received to that effect, and no new burial-ground shall be nearer than 450 yards to the village. Burial-grounds.

76. All graves, where the depth of soil will admit of it, shall not be less than six feet, and in no circumstances shall the depth of a grave be less than four feet. Graves.

77. It shall also be the duty of the Punchayet to frequently inspect all Dhurmsalas in or near a village, and to see that they are properly lime-washed, and that they and their environments are drained and are kept perfectly clean, and are provided with sufficient privy accommodation. Dhurmsalas.

Chapter VI.

Further duties of the Punchayet and instructions for use in outbreaks of cholera.

78. Immediately after the Punchayet is first appointed, the Chairman shall divide the village into as many wards as there are members of the Punchayet, and shall appoint each member to the charge of a particular ward. It must ever be remembered that the members of the Punchayet are appointed to exercise constant and strict supervision over the sanitary state of the village. Each member must therefore take individual interest in the ward entrusted to him, and shall see that cleanliness is strictly maintained in it, and that the provisions of these Rules are strictly enforced in it, and the inhabitants of each ward should be encouraged to inform their representative on the Punchayet of all such sanitary defects as come to their notice. Village to be divided into wards and a member of Punchayet appointed to take charge of each.

79. In furtherance also of the objects of these Rules the Punchayet shall have power to maintain a sufficient establishment of carts, servants, baskets, brooms, and such other appurtenances as may be necessary to carry out the purposes of this Act. It shall not be lawful for it to delegate the duty of cleansing the village to any contractor, but it shall through the village servants take adequate measures for cleansing the village, and such other action as is referred to in these rules. Duties of Punchayet, &c., not to be delegated.

80. The Punchayet shall also give every assistance to the Taluka Vaccinator, whenever he visits a village, by collecting all unprotected children for him to vaccinate, and it shall also from time to time warn the villagers that every child born in Vaccination

the village since the vaccinator's last visit, or who is unprotected, must be brought to him to be vacinated on the first occasion on which he subsequently visits the village.

Registration of births and deaths.

81. It will also be the duty of the Punchayet to take measures in concert with the Patel to ensure a correct registration of every birth and death which occurs in the village, and it should frequently warn the villagers by beat of battakee that whenever a birth or death occurs in their house the headman of the family is bound by law to report the occurrence to the Kulkurni or Telati, or in their absence to the Patel, within 24 hours after such occurrence, so that it may be duly entered in the Village Register. The village bhungies should likewise be instructed to give notice to the Patel immediately on its coming to their knowledge that a birth or death has taken place in any family.

Register of small-pox and cholera.

82. The Punchayet shall also assist the Patel in keeping a correct register of deaths from small-pox, or cholera, and shall bring such deaths immediately to his notice.

The blind, deaf, and dumb, and all lepers to be registered.

83. The Punchayet shall also at once make a register of all blind, deaf, and dumb persons, and of all persons affected with either black or white leprosy, living in the village, which shall be kept in readiness for the inspection of officers of Government. They should not allow persons affected with black leprosy to live in the same house with the healthy, but should provide proper shelter for them outside the village.

Offensive trades, liquor and opium shops, burning ghats, burial-grounds, to be registered.

84. The Punchayet should also keep a register of all offensive trades, liquor and opium shops, burning ghats, burial-grounds, and take measures at frequent intervals to test its correctness.

Cholera; action before outbreak.

85. As soon after it is appointed as possible the Punchayet shall provide a stock of cholera mixture, and cholera pills to be kept ready for emergencies, and when cholera is prevalent in the adjacent villages, great care must be taken to see that the provisions of these rules are most strictly carried out, and that the most perfect cleanliness of surface is everywhere maintained in the village, and that the purity of the drinking water is above suspicion. The villagers are to be warned that outbreaks of cholera are generally preceded by a period in which diarrhœa becomes prevalent, and that therefore any villager who has occasion to go to the rear more frequently than usual—even once more often—should forthwith at any hour, even in the middle of the night, apply to the Patel for medicine to check the diarrhœa, which at that time is easily curable, but which, if neglected, even for a very short time, will probably develop into cholera. This is most extremely important, and the Punchayet should so instruct the villagers in every way they can.

86. If cholera actually invades the village it is not advisable at that time to disturb deposits of filth. There should be none such in the village, but if in spite of these Rules there are deposits of filth found, the best thing to do is to cover them with at least six inches of fresh and clean earth, and to maintain the utmost cleanliness in the village. The presence of cholera ought to make no difference in cleaning, for the best preventive is to maintain the most scrupulous cleanliness at all times and seasons, independent of such time as cholera is in movement. As an extra precaution, however, watchmen should be placed to prevent any possible contamination of the sources of the drinking water, and the villagers should be told to boil all their drinking water. Action during outbreak.

87. The Punchayet should also warn the people to abstain from drinking spirits as the practice of drinking spirits is believed to pre-dispose the person taking them and to render him more liable to catch the disease. Spirits to be avoided as deadly.

88. When cholera appears in a village it is most important to tell the people that the disease is not contagious, and that therefore there is no danger in attending the sick; but it is especially necessary to recollect that cholera evidently attaches itself to *particular localities*. The principle to be borne in mind therefore is that the particular locality in which cholera shows itself must be looked upon as dangerous. If possible the patient should leave the house and be moved away to a shed or open place situated outside the village quite away from the place where he was attacked. Cholera not contagious, but attaches itself to particular localities.

89. The Punchayet should therefore have prepared before the outbreak, on the outskirts of the village but not near any of the filth sites, a grass hut or huts to which temporary shelter persons who leave their houses on account of cholera can go. Water, provisions, medicine, and attendance should of course be provided for such persons. Grass huts to be erected on the outskirts of village.

90. As plenty of fresh air greatly assists the chances of recovery, the friends and relations should not crowd round the person attacked, but only one or at the most two people should remain with him. Fresh air necessary for patient.

91. The patient should if possible lie on a cot, and not on the ground. He should be fanned, and one man should shampoo his arms and legs if he has cramps. Water which has been boiled and allowed to become cold may from time to time be given him to drink. He should be given the cholera medicine according to the directions; but if the surface of the the body is icy cold, if the lips are blue, if the eyes appear glazed, it is no good giving him medicine, but he should be well shampooed and the surface of the body should be well rubbed with the palms of the hands, and bottles containing Treatment of patient.

hot water should be applied to the extremities. If he can swallow he should be given hot mutton broth at frequent intervals. If his caste will not allow him to eat this, he should be given hot arrowroot conjee. It is very important to have the doors and windows, if any, left wide open. Never mind if he feels cold, fresh air is absolutely important, and he can be covered with warm clothes, &c., but at all hazards give him plenty of fresh air, and do not let more than two people be in the same room with him.

The stools and vomit must be immediately burnt and carried out of village.

92. It is all important to have the following rule most strictly carried out. The particular poison of cholera is supposed to be contained in the stools and vomited matter passed by the patient. It is therefore absolutely necessary that they be received in an old chatty or other receptacle so that they should not be spilt on the floor or bedding, and as soon as they are passed they should be burnt by igniting a little straw and dammer over them, and the ashes should be at once carried out of the village to the appointed place and be there buried under at least a foot of earth. It must not be expected that the stools will consist of solid fæcal matter; they will be more like rice-conjee water, and you must not say it is only water and therefore throw it anywhere. The stool, which is like rice-conjee water, is the most dangerous of all, therefore these directions must be most implicitly obeyed. Particular care must be taken on no account to bury the stools or vomit near any well, water, or tank, or to throw them out into the back yard or into a privy; but as soon as the stool is passed it must be *burnt*, and the ashes be carried out of the village *at once*. On no account should the vessel containing these discharges be put down in the house or in the back yard with the intention of removing them an hour or two hence; such a proceeding is *very dangerous*, for the stools when first passed are *not dangerous*, but they *very rapidly* after a very short interval become intensely poisonous. The only safe course is to remove them clean away *as soon as* they are passed. If the patient passes any of these stools on his bedding no matter what the value of the article may be, it should be at once burnt.

Body to be disposed of at once.

93. If the patient dies the body should be at once burnt, or buried in the clothes in which he died; they should not be taken off the body or sold.

Disinfection.

94. If a second case occurs in the same house all the inmates should be turned out, and after the recovery or death of the patient one pound of sulphur should be burnt in a pipkin in the room which he occupied. Whilst the process of disinfection is going on, the doors, windows, or other opening-should be closed and kept closed for four hours, after which

they should be opened. The floor should be dug up and the earth taken outside the village boundary and buried. The walls should be lime-washed and a portion of the tiles be removed from the roof, or if it is a mud roof an opening should be made in it so as to allow plenty of *light* and *air* to enter, and the inmates should not be allowed to return to the house for at least ten days.

Cleanliness is the surest preventive of cholera.

95. If the Punchayet take these simple precautions and follow out these instructions many lives will be saved, but much will depend on whether they are strictly observed. The villagers at times when there is no cholera should be warned that the surest preventive of cholera and other diseases is to have clean air, clean soil, clean food, clean water, clean houses, and clean persons.

If the above Rules are accepted, as calculated to give effect to the suggestions of the Government of India, and as being really necessary, as I maintain they are, to prevent disease and to improve the sanitary condition of the villages, it will be allowed on all sides that Government must provide the agency to see that the Punchayets really do their duty and carry out the orders of the Sanitary Boards. The work of organising the cleansing establishments in the villages, and after this has been carried out, of seeing that they really are effective must be continuous, and will be very onerous. The Punchayet will at first require much assistance. Places of natural resort, &c., must be selected by competent authority in each village, and it will require much labour in the first place to arrange and afterwards to maintain everything in smooth working order. The work of supervision on behalf of the Sanitary Board cannot be slurred over. It will not be sufficient to walk or ride through the streets of a village. Supervision of the condition of the *backyards*, *gullies*, *privies*, &c., is what is required, and must, if any good is to follow, be conscientiously performed. It is therefore manifest to those who know what this really means, that there must be a distinct and separate agency provided for this duty. It would be, as the Government of India points out in the Resolution quoted above, physically impossible for an already over-worked Collector and his assistants, even if they had sufficient knowledge of the requirements of sanitation, to undertake this work in addition to the multifarious duties they already perform—whilst the hardworked Mamlutdar could not possibly do it, as in the first place he does not possess the requisite knowledge, and in the next he could not devote even a fraction of his time to this duty, nor is it difficult to understand this when it is

remembered that the number of villages in a Taluka sometimes amounts to 200 or 250, so that it is perfectly clear, if the Act is to be worked successfully, there must necessarily be a separate and distinct staff of officials who must devote their whole time to this work.

I would therefore urge as strongly as I can that this opportunity should be taken to reorganise the Sanitary Department, and to entrust to its officers the organisation and superintendence of the cleansing establishments in the villages, by constituting them the sanitary advisers of the Punchayets, and by appointing them the agents on behalf of the Sanitary Board to see that the Punchayets really carry out the Village Rules. If this were done, the department, working under the orders of the Sanitary Board, would become a real Vis Viva, and would acquire inherent power to do good.

This is really a crying want, as at present the officers of the Sanitary Department, except as regards vaccination, have no executive duties to perform. They can only give advice, which, I regret to say, is hardly ever followed. Whilst they are so few in number, that it is absolutely ludicrous to suppose that they can maintain an effective supervision over the sanitary condition of their districts. Take the Presidency of Bombay for example, the population in which amounts to 16,454,414 persons, whilst its area comprises 124,130 square miles, or a larger area than that of Great Britain and Ireland combined. It is divided, for the purposes of vaccination and the registration of vital statistics, into districts, over each of which a Deputy Sanitary Commissioner presides. The following statement shows the number of Collectorates, villages, and vaccinators under the superintendence of each Deputy Sanitary Commissioner:—

Number.	Registration Districts.	Number.		
		Collectorates.	Villages.	Vaccinators.
1	Western	4	7,379	71
2	Central	5	5,856	93
3	Southern	4	4,600	98
4	Eastern Guzerat . .	5	3,290	79
5	Sind	5	3,410	66

No. 1 District covers an area of 26,320 square miles, and has a population of 3,493,821 persons. In other words, the area equals more than half the area of England, and the population exceeds that of Scotland by about 42,000 persons. No. 2 covers an area of 30,252 square miles, which is about equal to that of Scotland (30,401). The population amounts

to 4,858,709 persons, or nearly the same population as in Ireland. No. 3 has a population of 4,132,186 persons living on an area of 24,390 square miles. No. 4 covers 27,712 square miles, and has a population of 4,102,314 persons. No. 5 comprises an area of 48,014 square miles, on which there lives a population of 2,413,823 persons.

I would ask any thinking man whether it is physically possible for 5 Deputy Sanitary Commissioners to travel over such vast areas and to efficiently superintend not only the sanitary condition of the towns and villages in them, but also to inspect, as efficiency demands, the work of each individual vaccinator in each taluka and town of each collectorate in their district. It surely must be conceded that it is simply a matter of impossibility for them, able and zealous as they are, to do this, and the strongest necessity exists for strengthening the Sanitary Department and for entrusting it with executive functions.

The first thing to do, in my most mature opinion, is to reduce the area of supervision to one of reasonable and practical dimensions, and I am convinced that this ought not to exceed the area of each collectorate; and I therefore regard it as absolutely essential that there should be a health officer for each collectorate. It would be impossible on account of the very heavy expense it would entail to recommend that these health officers should be European commissioned officers. I therefore suggest that they be selected from that very valuable class of public servants the Assistant Surgeons, who should have under their orders a staff of native inspectors who have received a certificate of competency, with respect to their acquaintance with the details of practical sanitation, and who should draw fair pay to keep them out of temptation. These men should be solely and constantly employed in seeing that the cleansing establishments in the villages did their duty. Lest it should be proposed that the present staff of taluka vaccinators should act as these sanitary inspectors, I think it well at once to state that any such proposal is impractical and would not work, as the vaccinators already have more work to do than they can properly perform; nor have they time to go through the villages, as they have to pay two visits to each village in eight days, and they do not visit it again probably for a year, so that they could not possibly perform this additional work. The health officers would not only see that the Punchayets did their duty as regards water-supply, drainage, and conservancy in every village in their collectorate, but they would also inspect all dispensaries therein, whereby they would become acquainted with the incidence and movement of disease. The vaccination establishments employed in each taluka, town, and cantonment in the zilla

would be placed under their orders, and they would compile in their head-quarter office the vital statistics received from each village and town in the collectorate, and would at once bring to notice the outbreak of any epidemic disease and take immediate steps to prevent its spreading.

In order to supervise the work of the health officers it would be necessary to appoint European medical officers, designated Deputy Sanitary Commissioners, who would be constantly travelling throughout their divisions, which might correspond in area to those of the Revenue Commissioners. Whilst at the head of the Sanitary Department, thus organised, would be the Sanitary Commissioner, who, as now, would be the sanitary adviser to Government in the Military, as well as in the Civil Departments, and who himself would take charge of the larger municipalities, and who would also be constantly travelling to inspect the work of the officers subordinate to him, and who would thus be in a position through his establishment to give effect to the orders of the Sanitary Board.

The Sanitary Department, reorganised in the manner I advocate, would be concrete and compact, and a potent engine for good, and if the working of a practical Village Sanitation Act is entrusted to its officers, as a matter of the utmost certainty cholera would at once lose its intensity, and eventually become eradicated—whilst other indigenous fevers, small-pox, &c., would assume a much milder type, and a healthy rural population would grow up, the labour market would be much more amply supplied, an increased area of land would be brought under cultivation, and the revenue of the country would be augmented, whilst England would cease to be as now stigmatized by foreign nations, as being entirely indifferent to the just demands of the civilized world and to the real welfare of the 200 millions of natives of India committed to its charge, among whom such a terrible mortality is now permitted year after year to take place without any measures being taken by Government to prevent it.

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8, Dynevor Road, Bedford;
12th September 1889.

G. I. C. P. O.—No. 12 H. D.—2-1-91.—300. W. B. G.